

CLAIM

What is claimed is:

1. An expert system for dyeing cotton fabrics with reactive dyes used for the exhaust dyeing works of the reactive dye used for 100% cotton fabrics,
5 comprising:

a user interface used for users to input data and display the computing results of the expert system;

a database used to store the dyeing feature parameters of the reactive dye;

- 10 a knowledge library containing dyeing process parameter groups of reactive dye, dyeing process design criteria and algorithm; and

an inference engine containing a query serial and a computing procedure used to bind data input by users with the database and the knowledge library for operation.

- 15 2. The expert system for dyeing cotton fabrics with reactive dyes as claimed in claim 1, wherein the data input is the K/S and absorbency of the reactive dye.

3. The expert system for dyeing cotton fabrics with reactive dyes as claimed in claim 1, wherein the system computing results include:
20 compatibility indices, recommended salt volume, recommended alkali volume, dyeing processes and costs.

4. The expert system for dyeing cotton fabrics with reactive dyes as claimed in claim 1, wherein dyeing feature parameters include first exhaustion, final exhaustion, reactivity, fixation and T_{50} .

- 25 5. The expert system for dyeing cotton fabrics with reactive dyes as claimed in claim 1, wherein the parameter groups of dyeing processes

include: cotton fabrics specification, operation parameters of dyeing machines, dyeing liquor ratio and dye recipe.

6. The expert system for dyeing cotton fabrics with reactive dyes as claimed in claim 1, wherein the criteria for the dyeing process design are the dyeing criteria for 60°C reactive dyes and the dyeing criteria for 80°C reactive dyes.

7. The expert system for dyeing cotton fabrics with reactive dyes as claimed in claim 1, wherein the algorithms include the compatibility index algorithm, salt volume algorithm and alkali volume algorithm.

8. The expert system for dyeing cotton fabrics with reactive dyes as claimed in claim 1, wherein there is a query serial and a computing procedure as logical inference approaches; the expert system will compare the parameters in the database with the data input and queries requested by users automatically and display the results computed based on the computing criteria in the knowledge library on the user interface.